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The Influence Of Income On Global Food Spending

Food spending patterns vary widely around the world. Geographic location and culture help to explain part of food expenditure variations across countries. Economic conditions such as per capita income, food prices, and rates of urbanization also provide critical information for explaining consumer expenditure behavior and for predicting trends in food spending, consumption, and trade.

Knowledge of the forces contributing to food spending patterns can help to improve predictions of future demand for agricultural commodities and of subsequent shifts in international production patterns, trade flows, and price levels. USDA's Economic Research Service studied 51 countries, home to 2.5 billion of the world's 5.8 billion people, to compare spending and consumption patterns and their relationship to income. The countries were divided into three groups based on their 1993 per capita gross domestic product (GDP): *high income* (per capita GDP exceeding US$9,000), *middle income* (per capita GDP between $770 and $9,000), and *low income* (less than $770).

Economic theory offers several guidelines for measuring and predicting food spending behavior when controlling for noneconomic factors. *Engel's Law*—an empirical "rule" of consumption— states that the proportion of a nation's income spent on food is a good index of the nation's welfare. The lower the proportion, the more prosperous the nation.

Comparisons across the study countries are consistent with Engel's Law—as incomes rise, a smaller share of expenditures is devoted to food. *High-income* countries in the sample spent an average of 16 percent of their private consumption expenditure (PCE) on food, while *middle-income* countries spent 35 percent and the *low-income* group spent 55 percent. Of the countries included in the study, the U.S. spent the smallest share of its PCE on food at home—only 9 percent—while Tanzania, with the lowest per capita income, spent the highest share—71 percent.

While the share of PCE spent on food at home reflects the prosperity or poverty of a country's citizens, it also hints at differences in the composition of their diets. The study data confirmed that rising incomes are associated with more diverse diets, and that as incomes rise, caloric intake increases to a point of satiation. People with very low incomes are forced to spend most of their income on food simply to subsist. As a result, they tend to focus purchases on low-cost, high-calorie foods. As incomes rise, they will almost always buy more food and add more costly items (e.g., meats) to their diets.

While absolute spending on food may increase as incomes move up, its share of total PCE declines. As basic food needs are satisfied, extra income will be spent on other consumer goods, such as clothes and entertainment.

The numbers presented here refer only to food consumed at home. Data on food eaten in cafeterias, restaurants, fast-food outlets, and other eating places are not available for some countries and were therefore not included. The U.S. is among the countries where spending on food eaten away from home is significant, amounting to one-third or more of total food spending.

In most developing countries, food expenditure data do not capture the total amount of food available to the average household because they exclude food grown for personal use in individual gardens and on subsistence farms. As a result, for households with significant at-home food production, the food share of PCE tends to understate the value of food consumed.

In *low-income* countries, there is substantial home food production in rural areas, where an average of 73 percent of the population lives. For example, a 1991 study of the "Rural Sierra" region of Peru indicated that 51 percent of all food

Private Consumption Expenditure Defined

The United Nations defines private consumption expenditure (PCE) as the sum of spending by resident households and private nonprofit organizations serving households. Resident household spending consists of expenditures on food, clothing, rent, fuel, furniture, household operation, medical care and health, transportation, communication, recreation and entertainment, education and cultural services, personal care, and miscellaneous other items.

Expenditures by private nonprofit organizations consist of spending on research and education, and on medical, health, and welfare services by religious, professional, and labor organizations.

Expenditure data for this study are derived from the United Nations' System of National Accounts and from supporting World Bank data. Absolute spending on food was calculated in constant 1993 U.S. dollars for each country in the study.

consumed was produced at home. This included large shares of vegetable, meat, and dairy product consumption, whereas grains and oils were mostly purchased.

Income: Primary Factor In Food Spending Behavior

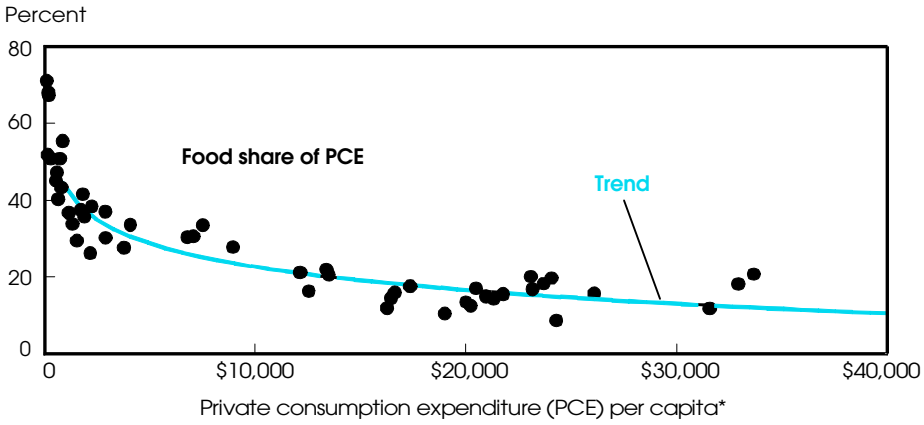
The level of per capita income explains most of the differences in food expenditure shares among countries. However, even within each income group, food expenditure shares differed considerably. Among the 24 countries in the *high-income* group, 5 spent more than 20 percent of their PCE on food, with the highest share held by Israel (22 percent). On the other hand, residents of Canada, Luxembourg, the United Kingdom (U.K.), and the U.S. spent less than 12 percent of their PCE on food.

For the 18 *middle-income* countries, the share of PCE spent on food ranged from a low of 26 percent in Thailand to a high of 55 percent in the Philippines. For all 9 *low-income* countries, the share of PCE spent on food exceeded 40 percent. Tanzania, Nepal, and Sierra Leone allocated over 67 percent of their PCE to food.

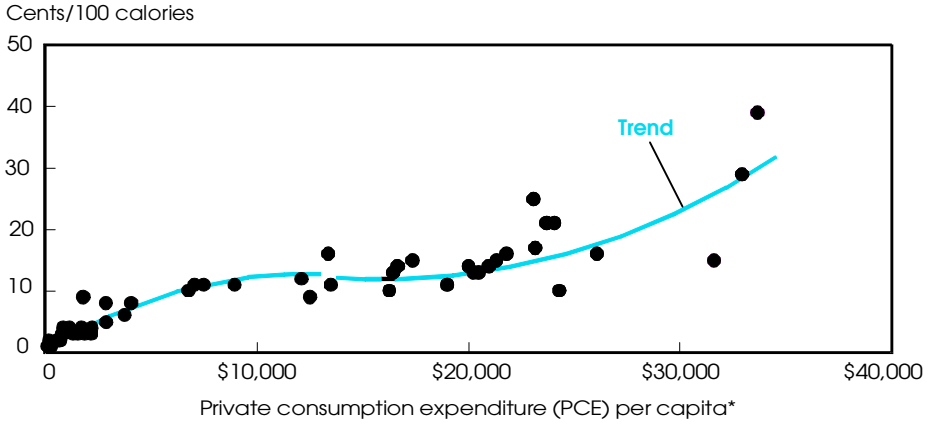
Within an income category, large differences in a country's food spending patterns are associated with differences in food prices, preferences for particular food items, and urbanization rates. Food prices vary for a number of reasons. While supply relative to demand is critical to price formation, food prices are also influenced by the efficiency of food production and marketing systems, import conditions, and/or the level of government-provided food subsidies.

Efficiencies in meat production and marketing, for example, help to lower the marketing margin, and ultimately the retail price of meat, for consumers in the U.S. For decades, industrial countries in North America and Europe have enjoyed low-priced tropical foods imported from Latin America and Africa under preferential trade terms. In the countries of the former Soviet Union and Eastern Europe, food subsidies during the Soviet era (and some that survive today) helped to keep prices for meat and other basic foods relatively low.

Food Share of Spending Is Lower for Higher Income Countries . . .



. . . While Their Spending per Calorie Is Greater



*U.S. dollars. Used as proxy for a country's per capita income.
Source: U.N. System of National Accounts; World Bank, *World Development Report 1995.*

Economic Research Service, USDA

The role of food preferences in per capita food expenditures is well illustrated by comparing the U.K. and Italy. In the U.K., food accounts for only 12 percent of PCE, compared with 18 percent in Italy. A closer look at diets indicates that U.K. residents eat four times the amount of potatoes—an inexpensive food item—as people in Italy. Italians consume almost twice as much of other, more expensive vegetables and fruits, and per capita meat consumption is higher in Italy than in the U.K.

As countries develop, changing rates of urbanization are also expected to affect decisions on food expenditures. As urbanization accelerates, diets tend to diversify. One reason for this is the wider variety of foods available in urban markets compared with rural areas. Another is the increasing likelihood of employment of women in urban areas; as the opportunity cost of a woman's time rises, so will demand for foods that require less preparation time.

Since 1980, urbanization rates have increased steadily in low- and middle-income countries. According to the World Bank, the urban population rose from 22 to 28 percent of total population between 1980 and 1994 in *low-income* countries, and from 52 to 61 percent in *middle-income* countries. These population shifts are expected to result in more highly diversified diets and therefore changes in food expenditures.

Food Intake Precariously Low In Many Countries

A high share of PCE spent on food does not translate into high consumption—the opposite is generally the case. Sierra Leone, for example, with a 68-percent food share of PCE, consumes less than 1,700 calories per capita. On the other hand, the U.S., with the lowest share of PCE spent on food, has one of the highest per capita daily calorie consumption levels in the world—3,732 calories.

High-income countries average 3,364 calories a day, 50 percent more than *low-income* countries, whose consumption as a group is less than 2,200 calories a day. This is only slightly more than the 2,100 calories the United Nations recommends as a minimum to sustain life without allowing for work or play, and it is less than the 2,300 calories that the U.S. Agency for International Development (USAID) designates as a threshold level to determine food aid needs.

These recommended calorie levels represent guidelines for national averages and should not be confused with personal intake recommendations as provided by USDA for U.S. consumers. The data on per capita calorie consumption represent actual disappearance, not intakes, because they include food that was available but ended up being wasted. In *high-income* countries, some food ends up as trash; in *low-income* countries, food may spoil because of inadequate transportation and storage facilities.

The eight *middle-income* countries with per capita GDP above $2,800 average almost the same level of calorie consumption as *high-income* countries—close to 3,300 calories a day. However, four *middle-income* countries—Peru, Guatemala, the Philippines, and Bolivia—fall below 2,300 calories, even though the average for the *middle-income* group is near 2,800.

In the *low-income* group, only Egypt, Honduras, and India have per capita daily consumption above 2,300 calories. Egypt's consumption of 3,335 calories per capita per day is extraordinarily high considering its yearly per capita GDP of $697. This high value results from government subsidies that keep food prices low and provide a safety net for low-income people.

Consumption in almost 20 percent of the 51 countries studied is below the USAID's suggested nutritional requirement of 2,300 calories. In Ethiopia, the average daily consumption of 1,610 calories per capita in 1992 was 30 percent below the threshold, even though the country received 1 million tons of cereals in food aid. Ethiopia's extremely low calorie consumption was reflected in all nutrition indicators. For example, almost half of Ethiopian children were underweight, and life expectancy at birth was just 48 years. The Tanzanian population, with the highest proportion of their PCE allocated to food, averaged only 2,018 calories per capita per day in 1992, and malnutrition affected 28 percent of children under 5 years of age.

Quantity & Quality In Food Consumption

While *high-income* countries spend a lower share of their PCE on food, the absolute amount they spend on food is much higher than expenditures by *low-income* countries. In 1993, the Japanese spent an average of $4,071 per capita a year on food at home, more than 80 times the $49 spent by Tanzanians. Yearly U.S. at-home food spending averaged $1,427 per capita in 1993.

Higher absolute spending on food translates into higher cost per calorie. *High-income* countries spent 16 cents per 100 calories on average—8 times as much as the average cost in *low-income* countries—while the per capita GDP in *high-income* countries was almost 60 times greater on average. In *middle-income* countries, the average cost per 100 calories was 6 cents.

High-income countries can afford to consume larger amounts of costly and more nutritious meat and fish, dairy products, fruits, vegetables, and processed foods. France consumes the highest share of meat and fish, which account for 19 percent of daily calorie consumption. In the U.S., meat and fish account for 16 percent of daily calories. In contrast, cheaper cereals and root crops make up three-quarters of the daily diet in Tanzania, Nepal, and Ethiopia.

People in Algeria and Mexico consume almost twice the amount of cereals per capita as U.S. residents, but only half the amount of vegetables. Per capita milk consumption in the U.S. is 2.5 times that in Algeria and Mexico. Vegetable oils, a relatively expensive food item, are another important source of calories in high-income and middle-income countries.

Japan & Ireland: Exceptions to the Rule

Rising incomes do not always translate into purchase of larger quantities of food. Japan, the nation with the highest per capita GDP, is at the bottom of the *high-income* group in calorie consumption, with less than 2,900 calories per capita per day. Ireland, one of the poorest of the *high-income* countries, has the highest calorie consumption—3,837 calories per capita per day. At the same time, the two countries allocate a similar share of their PCE to food.

Japan's per capita consumption is almost one-quarter lower than Ireland's. Part of this discrepancy can be explained by differences in diet. In Ireland, the amount of calories derived from animal products is twice as much as in Japan. Beef, pork, and butter, all high in fat (which contains more calories per gram than protein or carbohydrates), are particularly popular in Ireland. The Japanese prefer fish and seafood, which have a lower fat content. Milk, another important source of calories, is consumed four times more per capita in Ireland than in Japan. Vegetable products, which consist mainly of carbohydrates, account for almost 80 percent of the Japanese diet but less than 70 percent of the Irish diet.

Annual per capita meat consumption is only 40 pounds in Algeria and 89 pounds in Mexico, far below the 223 pounds in France or the 264 pounds in the U.S.

High costs per calorie can also result from high domestic food prices. In Japan, for example, high farm production costs, import tariffs, and manufacturers' traditional control of retail prices have contributed to food prices that are among the highest in the world. Rice, the staple in Japan, and meat and fruit, are very expensive and constitute a large part of food spending. Moreover, the high value of the Japanese currency in recent years results in even higher prices when the yen is converted into U.S. dollars for comparison.

Over the next decade and beyond, economic growth, coupled with high rates of population growth and urbanization, is expected to fuel demand for food and stimulate diet diversification in low- and middle-income countries, particularly those in East Asia, Latin America, North Africa, and the Middle East. As incomes rise, these countries are likely to replace some of the grains, roots, and tubers in their diets with high-value products (HVP's) such as meat, milk, vegetable oil, fruits, and vegetables.

While most developing countries tend to produce meat domestically rather than rely on imports, demand for imported feed is expected to rise. Most other HVP's are generally not produced domestically. Diet diversification stemming from strong income growth in developing countries may create opportunities for increased agricultural exports to these countries.

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